



Docket No.: 214799US0CONT

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COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

RE: Application Serial No.: 09/982,237

Applicants: Hartwig LANGE, et al.

Filing Date: October 19, 2001

For: STABLE AND HIGH SOLIDS AQUEOUS  
DISPERSIONS OF BLOCKED POLYISOCYANATES

Group Art Unit: 1711

Examiner: R. Gorr

"RESPONSE UNDER 37 CFR 1.116-  
EXPEDITED PROCEDURE EXAMINING  
GROUP 1711"

SIR:

Attached hereto for filing are the following papers:

**RESPONSE UNDER 37 C.F.R. §1.116**

Our check in the amount of \$0.00 is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:

Hartwig LANGE et al

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RESPONSE UNDER 37 C.F.R. §1.116

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

The following is responsive to the Office Action dated February 24, 2003, concerning the above-identified application.

REMARKS

Claims 6-11, 19-21 are active in the case. Reconsideration is respectfully requested.

Applicants' representative wishes to thank Examiner Gorr for the helpful and courteous discussion of April 3, 2003. As a result of the discussion, it is believed that the prosecution of the application has been materially advanced and that issues in the case have been clarified.

The present invention relates to stable, high-solids content aqueous dispersions of blocked polyisocyanates.

### Invention

The present is directed to dispersion of a mixture of two polyisocyanates, one of which is a blocked, hydrophilically modified polyisocyanate (A) and the other polyisocyanate is a blocked, hydrophobic modified polyisocyanate (B) in an auxiliary solvent. The product aqueous dispersion has a solids content ranging from 35-80 % by weight. In a preferred aspect of the invention the dispersion has a solids content ranging from 40-60 % by wt and an auxiliary solvent content of <2 % by wt.

Claim 21 claims a dispersion of a mixture of polyisocyanates as described above and further recites that the hydrophilically modified polyisocyanate component facilitates the dispersion of the hydrophobic polyisocyanate component in the product dispersion.

### Prior Art Rejection

Claims 6-11 and 19-21 stand rejected based on 35 USC 102(b) as anticipated by Burkhardt, U.S. Patent 4,098,933. This ground of rejection is respectfully traversed.

As applicants' representative stressed in the discussion with the Examiner, all of the embodiments of the invention directed to a stable and high-solids content aqueous dispersion require the presence of two dispersed components in admixture which are from 30-80 % by wt of a blocked, hydrophobic polyisocyanate component and 20-70 % by wt of blocked, hydrophilically modified polyisocyanate component. It is therefore clear from the claims that two separate and distinct molecular materials are present in the dispersion of the invention. One component is blocked hydrophobic polyisocyanate which means that the molecules thereof contain absolutely **no** hydrophilic groups. The other polyisocyanate component is such that some of the isocyanate groups of the polymer molecules have been reacted with molecules that introduce hydrophilic groups into the hydrophobic polyisocyanate molecules, while at least most

of the remaining unreacted isocyanate groups are blocked by reaction with blocking agent. Thus, the present dispersion is based on the combination of two distinctly different blocked polyisocyanates each of which is present in significant defined amounts.

Applicants at this point refer to Example 1 of the present application which clearly shows a procedure which is consistent with the requirements of the present claims. Section 1.1 on page 26 describes the preparation of the hydrophilic polyisocyanate component in which polyisocyanate reactant, i.e., IPDI isocyanurate (VESTANAT T1890), and IPDI (VESTANAT IPDI), is reacted with dimethylolpropionic acid in the presence of a catalyst, thereby resulting in the introduction of hydrophilic dimethylpropionic acid groups into the polyisocyanate product. The content of available isocyanate groups in the product had decreased to 7.8-8.0 %, which residual isocyanate groups are available for reaction with blocking agent. Subsequently, in Section 1.2, IPDI isocyanurate (unblocked and hydrophobic) is added to the solution containing the hydrophilic group containing product of Section 1.1, and then blocking of available isocyanate groups in both types of polymer materials is achieved by the addition of methyl ethyl ketoxime to the combined material to achieve a high solids content dispersion. The dispersion thus clearly contains hydrophilically modified, blocked polyisocyanate molecules and molecules of polyisocyanate that are blocked, but contain **no** hydrophilic groups.

Turning now to Burkhardt, a water-soluble or water-dispersible product is prepared as described in the paragraph bridging columns 1 and 2, by starting with an organic polyisocyanate in which from 50 to 99.8 % of the isocyanate groups are blocked, thereby qualifying as a partially blocked polyisocyanate. The preparation of a partially blocked polyisocyanate is described, for instance, in Example 1 where acetoacetic acid ethyl ester and phenolate are reacted with biuretized hexamethylene diisocyanate. The exothermic reaction thereby results in substantially most of the isocyanate groups (about 90 %) being reacted with blocking agent (from 23.8 wt%

isocyanate groups down to 1.5 wt% isocyanate groups or a reduction in NCO content from 2.267 equiv. to 0.283 equiv.) which clearly means that essentially every polyisocyanate molecule contains some significant amount of blocking agent. Thereafter, whatever isocyanate groups that remain in the polymer molecules are reacted with a salt of N-methyl aminoethane sulfonic acid which results in the introduction of hydrophilic groups into the molecules of product. Under these conditions it is believed clear that a product is obtained unlike that which is claimed in the present claims, where distinct and substantial amounts of two different polyisocyanates are prepared and combined in a mixture. Whatever mixed blocked polyisocyanate product is prepared in the patent, it is not a product such as described in the present claims that contain from 20 to 70 % by wt of blocked, hydrophilically modified polyisocyanate and from 30 to 80 % by wt of blocked, hydrophobic polyisocyanate.

Again applicants emphasize that Burkhardt requires that the starting material for the product of the patent must be a **partially** blocked polyisocyanate material. This is not the case of the present invention where, initially, a polyisocyanate is reacted with an agent that introduces hydrophilic groups into a polyisocyanate, and thereafter, not only is processing conducted which blocks the remainder of available isocyanate groups in the polyisocyanate containing hydrophilic groups, but also blocked polyisocyanate that does not contain hydrophilic groups is provided by some means in admixture with the blocked, hydrophilic group containing polyisocyanate in order to complete the claimed dispersion. Applicants continue to believe that the Burkhardt patent does not anticipate the invention and withdrawal of the rejection is respectfully requested.

It is believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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